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OPENNESS, ECONOMIC REFORMS, AND POVERTY: GLOBALIZATION IN DEVELOPING COUNTRIES**

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ABSTRACT

This paper addresses a key issue in the current debate on economic development: the impact of globalization on poverty. After having discussed the problems related to the definition and measurement of both poverty and globalization, we perform a panel analysis which adds to recent literature by explicitly considering *relative* poverty and by conducting robustness analysis with respect to data, sources and dimensions of globalization. As far as absolute poverty is concerned, both trade openness and the "size of the government" seem to be associated with lower poverty levels. Conversely, financial openness is not linked to more poverty. With respect to relative poverty, trade openness does not affect it significantly, while weak evidence suggests that financial openness and policies aimed at reducing the size of the public intervention in the economy are linked to higher relative poverty.

JEL Classifications: I32, D31, F15, F21, C33.
Keywords: Globalization, Poverty, Trade Openness, Foreign Direct Investment, Developing Countries.

INTRODUCTION

Globalization and poverty are multidimensional issues about which we still know very little, and this is due to several reasons: (i) they suffer from severe measurement and definition shortcomings, with the consequence that empirical analysis in such

topic is a minefield in which it is easy to lose one's bearings; (ii) in its current features, globalization is a quite recent phenomenon spanning the last few decades of our economic history. As a consequence, the use of specific definitions, measures and sources of data rather than others can yield different results and entail divergent policy implications. In this connection, the construction of a reliable and independent database on poverty open to different approaches should be one of the main goals on the research agenda. This paper presents and uses a provisional framework for such a database.

While the debate about the effects of globalization on poverty, inequality and, more generally, on social development is central in the mass-media and in the political debate, the economic analysis is still in its infancy. Our contribution to this growing body of literature tends to focus almost exclusively on the between-country relationship between openness (trade and financial) and domestic poverty, leaving more thorough analysis of the within-country relationship to other research (Santarelli and Figini, 2004). The novelty of our approach resides in the following features: (i) we explicitly consider the link between openness and *relative* poverty; (ii) we assess the robustness of the results to other poverty definitions, namely absolute poverty, and measures coming from different sources; (iii) we extend the analysis to a multidimensional definition of globalization whereby it is not solely identified with openness to trade.

The paper is organized as follows. Section 2 surveys the recent literature; Sections 1 and four present the data and the methodology used in the paper; Section 5 outlines the main results of our analysis; Section 6 makes some concluding remarks.

A REVIEW OF RECENT LITERATURE

Although globalization is a central issue in contemporary international economics, the term has been in common usage only since the second half of the 1980s. It can be defined as a historical process driven by: (i) technological factors, such as the development of ICT, which reduce the *distance* between people in terms of both space and time; (ii) political factors, namely the demise of the bloc of former communist countries, which meant the end of one of the two systems of production and allocation of resources historically determined: the centrally planned economy; (iii) economic factors, partially as a consequence of point (ii), which have led the "global world" to adopt free-market oriented economic policies and individual behaviors.

In short, the economic characteristics of globalization are: the increasing openness of countries to international trade; the increasing liberalization of markets, particularly through the elimination of barriers to trade in goods and services and the development of an integrated international financial market; the decreasing role of the state in the economy, following the adoption of what Rodrik (2004) has defined the "stabilize, liberalize, and privatize" agenda.

Theoretical analyses and empirical evidence in relation to the way trade openness, financial openness and economic reforms affect poverty arise from a combination of arguments that are used in different fields of research. As a basic rationale, if (i) growth

is distribution neutral, (ii) trade enhances growth, and (iii) both openness and economic reforms favor trade, then it can be argued that (iv) globalization is beneficial for poverty. But the evidence, both theoretical and empirical, is much more controversial.

First, the trickle-down effect from growth to poverty reduction is based on the assumption that economic growth is distribution neutral or distribution improving. This is in contrast to the stylized facts of an inverted U-shape between level of development and inequality consistent with the clasiical theory of capital accumulation. (Kuznets, 1955). More recently, many theoretical and empirical studies have dealt with the argument of inequality to growth, growth to inequality and growth to poverty relationships.[1] For our purposes, however, it is sufficient to test the validity of the distribution neutrality of growth. Such a test has been done, among others, by Ravallion (2001), and Dollar and Kraay (2004). Ravallion (2001) concludes that growth is inequality neutral, spreading equally to the whole distribution, thereby confirming that economic growth is the main engine of poverty reduction. Dollar and Kraay (2004) support the same view, finding a one-to-one effect of growth on the income of the poor.

Second, as regards trade and growth, a broad strand of literature associates trade openness with more rapid growth.[2] Rodriguez and Rodrik (1999) have criticized such literature for its alleged lack of control for "other" economic policies and its use of largely unsatisfactory trade policy indicators. However, if the empirical evidence on the links between trade and growth is controversial, even more puzzling is the picture that emerges when the link between trade and poverty is analyzed.

As a matter of fact, the standard argument with regard to trade and poverty is based on the Stolper-Samuelson theorem, according to which trade results in gains for labor (the primary asset of the poor) since it is the relatively abundant factor in most low-income countries. In this analytical framework one can alternatively assume that there are two types of workers, high-skilled and low-skilled, with the latter being the relatively abundant factor of production in developing countries (DCs). Openness would benefit low-skilled labor intensive production, hence increasing demand and wages of low-skilled workers in developing countries; since low-skilled workers are the most likely to be in a situation of poverty, there would be a reduction in the number of poor and in inequality.[3] However, the restrictive assumptions upon which the theorem is built are not sufficient to provide a viable interpretation of the complexity of the real world, in which benefits and costs of trade are unevenly distributed between producers and consumers of exported and imported goods. Moreover, the adjustment to trade and to more investment may result in additional short and medium term costs for the poor. Accordingly, the beneficial impact of globalization on growth, and hence on poverty, would rely upon the assumption that income inequality decreases as a consequence of increased openness.

The allegedly beneficial effect of economic integration on poverty can also be assumed to stem from Foreign Direct Investment (FDI) if, due to lower levels of wages, production of low-skilled labor intensive goods moves to the DCs. However, it is important to stress that, as shown by Feenstra and Hanson (1997), international re-location could involve activities that are low-skilled labor intensive for the investing developed

country but high-skilled labor intensive for the host developing country, hence overturning the effects of FDI on inequality and poverty.[4]

Bhagwati and Srinivasan (2002) put forward another argument in favor of the beneficial effect of trade on poverty reduction. These authors affirm that if a country wants to maintain an export-led development strategy, that is, if a country wants to rely on free trade, it must maintain a framework of macroeconomic stability. Because stability implies low inflation, this is another channel through which trade affects the poor positively, since the poor tend to be hardest hit by high inflation.

Acemoglu and Ventura (2002) also support the view that international trade leads to a stable world income distribution (though reducing poverty) even in the absence of diminishing returns in production and technological spillover. Their model has two implications for our paper: first, international trade accelerates economic growth while keeping inequality between countries constant: therefore overall poverty gains from openness; second, no considerations can be drawn from this theory with regard to single country distributions and, therefore, to national poverty ratios.

Empirically, substantial progress in this field of research has been made possible by Dollar and Kraay (2004), who classify countries into globalizers and non-globalizers according to their performance in raising their trade volumes in GDP; they then show that the former group has experienced higher growth rates during the period 1977-97. They also define as poor those individuals in the bottom fifth of the income distribution of a country and they econometrically test the relationship between growth in average incomes of the poor and growth in overall incomes, finding that the incomes of the poor rise proportionally with average incomes. However, they find that trade openness accelerates growth without leading to a sudden, one-time adjustment in real income. Rather, their empirical findings suggest that more economic integration (measured with a range of different indicators such as the presence of capital control, tariffs and membership of the WTO) does not have any systematic effect on domestic levels of inequality. They therefore conclude that growth is good for the poor.

Ravallion (2001) takes a more prudent position, pointing to the need for more country-specific research, while Sala-i-Martin (2002a) concludes that in the years of globalization both poverty and inequality have decreased.

UNCTAD's report (2002, chapter 3) comes up with some stylized facts about the links between poverty and trade. The overall conclusion of the report is that the current conventional wisdom that persistent poverty in DCs is due to their low level of trade integration is too simplistic. The *form* of trade integration is much more important than its *degree*. In particular, UNCTAD (2002) shows that completely different paths in poverty are exhibited by non-oil primary commodity exporters (in which poverty has increased) and by manufacturer exporters, which generally display a lower level of poverty. The former group of countries, however, is well integrated into the global economy in terms of trade over GDP ratios and it has already undertaken trade liberalization. But it is becoming increasingly marginalized in global trade flows and records low rates of economic growth and a rising incidence of poverty.

Finally, Santos-Paulino and Thirlwall (2004), in relation to 22 developing countries, find that adoption of trade liberalization policies stimulated export growth but raised import growth by more, leading to a worsening of the balance of trade and payments. Thus, trade liberalization is likely to have exerted a net positive effect on income growth over the last three decades, but it may also have reduced growth below what might otherwise have been had a balance between exports and imports been maintained.

The lack of a strong theoretical framework about globalization and poverty and the puzzling empirical evidence call therefore for more research.

DATA, MEASUREMENT AND METHODOLOGY

Without entering the discussion on the possible alternative definitions of poverty,[5] for the purposes of the present paper it is sufficient to define as poor an individual unable to achieve minimal adequate *living standards*, whatever these may denote[6]. We built our database and methodology mainly on some recent influential (and controversial) studies: we took some of the data used from Sala-i-Martin (2002a) and Ravallion (2001), whereas we borrowed some ideas for the econometric exercise from Dollar and Kraay (2004). To these, we added three important features: (i) we explicitly considered relative poverty to be an important concept of poverty; (ii) we broadened the definition of globalization, which was not simply identified with trade openness, by including various measures of financial integration, liberalization and privatization; (iii) we tested the robustness of empirical findings to different poverty and globalization definitions.

Measuring Individual Income and Poverty

International studies on poverty share many problems: (i) the low degree of comparability over time and between countries due to the use of different income definitions (gross income, net income, expenditure) and units (person, household, household per capita) in the original household surveys from which poverty indices are computed; (ii) the choice of the *ad hoc* procedures used to deflate nominal values for changes in the cost of living, since the general consumer price index does not usually reflect spending behaviors of the poor; (iii) the methodology used to correct the purchasing power of different currencies; (iv) the underestimation of inequality and relative poverty due to underreporting in the household surveys, which is likely to be greater for the rich.

As a consequence, when analyzing poverty in different countries, one should bear in mind that poverty rates based on different indicators cannot be treated as fully comparable. As shown by Lanjouw and Lanjouw (2001), Chen and Ravallion (2001), Deininger and Squire (1996), and Winters (2000 and 2004) some arrangements should be made: (i) PPP adjustments, although not the best solution, should be used to correct for costs of living across countries and over time; (ii) when studying poverty in the DCs, the definition of poverty should be more consistent with standards of such countries; (iii) non-

wage income and taxation should be adequately treated when conducting country-level analyses.

Here we measured poverty according to alternative definitions and sources. In particular, besides measures of absolute poverty, we extensively used indices of relative poverty computed as the number of income recipients (or expenditure units) whose incomes are below 50% (or 40%) of the mean income.[7] It is true that the extent of relative poverty depends crucially on the shape of the distribution of income, although measures of relative poverty tackle distribution issues from a different perspective.[8] On the other hand, we emphasize that the assessment of poverty must consider social and psychological dimensions linked to the type of inequality and to the social position or social exclusion of the poor, which are better grasped by the concept of relative poverty. The "relative income hypothesis" has shown that individuals look upward when making comparisons, with the consequence that "raising everybody's income does not increase everybody's happiness, because in comparison to others income has not improved" (Frey and Stutzer, 2002, p. 411)[9].

Finally, the use of relative poverty allows some measurability and comparability problems to be overcome: (i) since all the incomes are normalized, no exchange rates have to be applied; (ii) the problem of updating the poverty line does not apply because it is a fixed percentage of the mean income.[10]

Our database is related to poverty in the developing world and was constructed by adding information from different sources: (i) absolute poverty ratios (54 countries) taken from World Bank estimates and referring to the percentage (and number) of people living below the international poverty lines of 1 and 2 USD/PPP equivalent per day; (ii) a different estimate of previous figures from Sala-i-Martin (2002b)[11]; (iii) poverty ratios computed by national statistics offices using national poverty lines and collected by the World Bank (World Bank, 2001)[12]; (iv) relative poverty ratios computed on UNU-WIDER distribution data using 40% and 50% of the mean income as poverty lines.

Measuring Globalization

One of the most commonly used indices of the structural dimension of globalization is the degree of trade openness, an indicator that has received only scant attention from economic theorists (Harrison, 1996). This indicator does not only consider what a country exports or imports, but also how much it exports and imports in relation to its GDP: the ratio [(Exports)+(Imports)]/GDP will be used as an initial proxy for the openness of an economy throughout the paper.

Many problems surround the definition of 'degree of openness': in particular, trade flows are an imperfect proxy for trade policy and are affected by other dimensions such as the country's size and the distribution of assets. An important feature of openness is the presence or the absence of policy distortions or trade barriers. These include tariff rates or coverage ratios for non-tariff barriers. We therefore used other measures of glob-

alization such as tariffs over trade or over GDP or, when available, indices of liberalization like the *Economic Freedom of the World* index. This dimension is important because it may be that, even though actual trade performances are dismal, highly attractive incentives implemented to foster investment and trade in poor countries are certainly a better proxy for trade liberalization policies than actual performance (Anwar, 2001). Of course, problems arise when attempting to aggregate these trade barriers data into an overall index.

As said, globalization is not solely openness to international trade, although this is probably its most important feature. The liberalization of financial markets has brought about a huge increase in capital flows, particularly in the form of Foreign Direct Investment (FDI). Hence, we included financial openness as another dimension of globalization by considering gross or net inflows of FDI over GDP ratios, or FDI over total capital formation[13]. There is much debate on whether FDI can be used to interpret financial openness: on the one side, due to the diversity in the nature and the intensity of the alternative instruments that governments can use to limit capital movements across borders, a reliable measure of financial openness is difficult to find. FDI would capture only one side of the coin: in fact, this variable measures the medium and long-term ability of a country to attract investment from abroad. On the other side, most skeptical views of the globalization process blame the liberalization of global financial markets for their allegedly negative effects in terms of increasing financial speculation, unemployment and poverty.[14] In this respect, one has to be aware that FDI are likely to be correlated with short-term speculative capital movements and therefore might also capture the negative effect of portfolio movements and short-term speculation.[15]

A third factor characterizing globalization is privatization. We also attempted to measure this aspect, by means of an index of privatization over GDP. Since this series was available for only a few DCs, we proxied the variation in public intervention with the change in public expenditure or in tax revenues, relative to GDP, over time. To disentangle the links of these two variables with poverty, one should take into account several issues: (i) social spending, which most likely affects poverty, is only one component of total public expenditure with which might have diverging trends; (ii) tax revenue changes might have different impacts on poverty according on how progressivity is modified and whether or not these changes take place in a framework of macroeconomic stabilization policies. To control for this latter issue, it is important to deal with the complementary measures that may have been implemented to tackle both macroeconomic instability and the adverse social effects of adjustment and stabilization programs.

Methodology

Although aware of the difficulties arising when one attempts to identify the links between the evolution of poverty and the phenomena related to globalization, in this paper we tested whether a statistically significant relationship exists between some dimensions

of globalization and poverty levels. For both concepts of poverty (absolute and relative) we ran model (1):

$$pov_{it} = b_o + b_1 TRADE_{it} + b_2 FDI_{it} + b_3 PUBLIC_{it} + x_{it}B + u_i + e_{it} \quad (1)$$

where the dependent variable is the poverty index in country i at time t. and where *TRADE, FDI, PUBLIC* are proxies for trade openness, financial openness and "role of the state" respectively. These proxies were measured by means of the different variables presented in the previous section, for which definitions and descriptive statistics are presented in the Appendix. Moreover, x is a vector of controls, which can be either time variant or country specific, u_i is the country specific residual and e_{it} is the error term with usual properties. Variables were all averaged over the period t, which is the five-year period surrounding 1970, 1975, 1980, 1985, 1990, 1995, 1998.[16]

According to what reviewed previously, supporters of globalization would expect TRADE and FDI to have a negative sign (i.e., an increase in trade or financial openness implies, *ceteris paribus*, a decrease in poverty ratios) while PUBLIC to have a positive sign (i.e., privatization policies, which act to reduce the size of the public sector would reduce poverty). However, opponents to globalization policies would expect the opposite signs, particularly with respect to FDI (following Feenstra and Hanson rationale) and to PUBLIC (since privatization hits safety nets which are mainly provided publicly).

The main problem with an undertaking of this kind is the high heterogeneity among countries, which hampers the identification of stylized facts relative to the entire sample of countries and which calls for the introduction of some controls. First, it is trivial to underline that poverty is higher in poor countries, and that in model [1] there should be a control for the country's level of development. However, one may argue that the absolute poverty rates of a country are completely determined by the country's per capita income and inequality in its distribution; therefore, controlling for per capita income on the right hand side would imply that the rest of the variables explain inequality, not poverty.[17] For this reason we did not include per capita GDP in model [1], although the inclusion of such variable marginally weakens the significance of coefficients TRADE and PUBLIC and strengthens those of FDI.

Moreover, we attempted to find some significant aggregations of countries in order to highlight different trends and behaviors according to various attributes and characteristics such as: 1) export specialization (oil, agricultural products, manufactured products; 2) region (Sub-Saharan Africa, East Asia, South Asia, Central Asia and Eastern Europe, Middle East and North Africa, Latin America). Dummies to capture these two characteristics were included in model [1]. The taxonomies of DCs introduced above were employed for the purposes of the econometric analysis in order to single out possible differences in the relevant coefficients determined by a country's belonging to one or another category.

SENSITIVITY ANALYSIS

As aptly shown by Easterly (2001), empirical analysis of the determinants of economic growth can be misleading, since causality is especially difficult to establish in this field. The econometric analysis reported in the present paper was even more difficult than is usually the case for economic growth, because of the low number of countries for which we had complete and reliable data on relative poverty and because of the scattered observations available, which provided us with a high unbalanced and irregularly spaced panel. Our sensitivity analysis therefore tackled the following issues:

Estimation techniques. Model [1] assumed the existence of country-specific effects. We used the Breusch and Pagan Lagrangian multiplier test to check whether the assumption of a country specific effect is more appropriate than the pooling of data. For all the specifications run, the test returned a high value of x^2, which allowed us to reject the null hypothesis of no random effects. It is well known that models like [1] can be estimated by using fixed effects (FE) or random effects (RE) techniques. The statistics of the Hausman test we obtained depended on the specification of the model run and we did not always get a value of the x^2 statistics low enough to allow rejection of the null hypothesis of no correlation between the country specific effect and other independent variables. Therefore, the choice of the RE technique as the preferred estimation of our model pivoted on the nature of the data we availed for: since our data did not represent the whole population of DCs but a random selection of countries depending upon the availability of data, RE was our preferred choice.

However, other estimation techniques, namely Maximum Likelihood, Ordinary Least Squares with Cluster, and Generalized Least Squares with heteroscedastic panels and autocorrelated time-series were also used and results were reported. We have to stress that the results we presented have to be read in terms of *direction* of the relationships, not in terms of marginal effects and, to this aim, it is important to comment that the use of alternative estimation techniques affected the estimate of the coefficients but very rarely their significance and never their sign.

Proxies. The number of countries and observations used in the econometric analysis depended on the index of poverty that acted as dependent variable, and on the proxies employed to measure a multidimensional and somehow vague concept such as globalization. Following Dollar and Kraay (2004) we used several techniques to test whether different measures of globalization and whether the inclusion / exclusion of some particular country explain the change in poverty.[18]

Model specification. The choice of the model specified in [1] was the result of a sensitivity analysis in which we also added other variables and tried aggregations of countries alternative to export specialization and regional belonging: these included: 1) the institutional context, measured by the degree of democracy (Gastil index); 2) structural adjustment (countries which have *or* have not adopted International Monetary Fund or World Bank structural adjustment programs, such as privatization schemes);[19] 3) exter-

nal debt to GDP ratio (highly, middle, and low indebted countries); 4) religious diversity (pre-Reform Christians, Reform Christians, Islam, Tribal, remaining groups such as Hinduism, Buddhism, Oriental);[20] 5) urban / rural structure of the economy. We also tried to address the issue of endogeneity by using instrumental variables. Some of these results are reported in the next section.

RESULTS

In what follows we provide a tentatively comprehensive, although succinct, description of the main results attained.

Absolute Poverty

With respect to absolute poverty, the only source of data that furnished us with a proper panel was Sala-i-Martin (2002a), which included a panel of 54 countries and full information on poverty for 1970, 1980, 1990 and 1998[21]. On the contrary, World Bank data provided at the best only two observations on poverty per country, which rendered the use of panel techniques difficult. However, we checked our results by running the model, when possible, also on World Bank data. In Table 1 we summarize some of the most interesting results we obtained with respect to absolute poverty.

In column 1 of Table 1 results from estimation of the basic model are presented. The dependent variable is 1 USD/PPP poverty ratios excerpted by Sala-i-Martin database. TRADE (a proxy for trade openness) was measured by the ratio of trade (import plus export) over GDP, FDI (as a proxy for financial openness) was measured by the net inflows of FDI over gross capital formation and PUBLIC (to embody the effect of the public sector in the economy) was measured by the total tax revenue over GDP. The main findings of our work with respect to the three main variables of the model can be outlined by looking at this specification. Both TRADE and PUBLIC have negative and significant signs, i.e. trade openness is associated with lower levels of poverty while a smaller size of the public sector is associated with higher levels of poverty. Whereas the first effect is an argument in support of globalization, the second is one against globalization[22]. More subtle is the role played by FDI, which should capture the process of international integration in capital markets: the sign is positive although not statistically significant.

The basic specification of the model in column 1 of Table 1 included as a control a set of dummy variables aimed at capturing geographic (and hence historical and cultural) differences besides differences concerning the production structures. Regional dummies for Latin America and Caribbean, North Africa and Middle East, Sub Saharan Africa, Eastern Europe and Central Asia, South and South East Asia were considered; Set Latin America as base region, positive and statistically significant coefficients were found for Sub Saharan Africa, which was largely expected.

Table 1. Panel regressions: Absolute poverty

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
TRADE		-0.15*** [-3.32]	-0.14*** [-3.23]	-0.06*** [-3.31]	-0.05 [-0.92]	-0.27*** [-4.17]	-0.27*** [-4.33]	-0.23*** [-5.10]	-0.15*** [-3.32]	-0.07* [-1.75]	-0.00 [-0.08]	-0.03 [-0.44]	0.01 [0.53]
FDI		0.06 [1.00]	0.06 [0.97]	0.07* [1.91]	0.00 [0.01]	0.34 [1.41]	0.04 [0.42]	0.54 [1.60]	0.07 [1.08]	0.11 [1.02]	0.03 [0.28]	-0.33* [-1.74]	0.07 [1.02]
PUBLIC		-0.55*** [-2.93]	-0.56*** [-3.04]	-0.58*** [-5.58]	-0.76*** [-2.86]	-0.55*** [-2.92]	-0.53** [-1.98]	-0.53** [-2.12]	-0.57*** [-3.00]	-0.08 [-0.40]	-0.97*** [-3.33]	-1.57*** [-3.57]	-0.44*** [-2.72]
Region dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Specialization dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	Within	0.27				0.12	0.26	0.13	0.28	0.01			
	Between	0.59				0.63	0.70	0.71	0.60	0.58			
	Overall	0.54			0.55	0.56	0.63	0.63	0.55	0.55	0.65	0.70	0.55
Wald χ^2		99	77 (LR)	300		100	137	136	99	68	16 (F)	40 (F)	9 (F)
No. observ.		144	144	139	144	203	144	203	139	149	95	101	95
No. groups		52	52	47	52	54	52	54	50	54	76	77	76

Notes: the value of *z* statistics in square brackets; *, **, *** mean that coefficients are statistically significant at the 90%, 95%, 99% respectively. The following variables, described in the Appendix, were included in the regression: Column 1: hpi1b = f (tra_gdp, nfdi_i, tax_gdp, region, spec) Random effect GLS; Column 2: hpi1b = f(tra_gdp, nfdi_i tax_gdp region, spec) MLE; Column 3: hpi1b = f(tra_gdp, nfdi_i, tax_gdp, region, spec,) GLS with heteroscedastic panels and autocorrelated time -series; Column 4 : hpi1b = f(tra_gdp, nfdi_i, tax_gdp, region, spec), OLS with cluster; Column 5: hpi1b = f(exp_gdp, nfdi_gdp, cge_gdp region, spec), RE GLS; Column 6: hpi2b = f(tra_gdp, nfdi_i, tax_gdp, region, spec) RE GLS; Column 7: hpi2b = f(tra_gdp, nfdi_gdp, cge_gdp , region, spec) RE GLS; Column 8: hpi1b = f(tra_gdp, nfdi_i, tax_gdp, region, spec) RE GLS without China and India. Column 9: hpi1b = f(tra_gdp, nfdi_i, cge_gdp, region, spec) with lags of one period; Column 10: hpi1c = f(tra_gdp, nfdi_i, cge_gdp, region, spec) OLS with cluster; Column 11: hpi2c = f(tra_gdp, nfdi_i, cge_gdp, region, spec) OLS with cluster; Column 12: gpi1c = f(tra_gdp, nfdi_i, cge_gdp, region, spec) OLS with cluster.

The specialization dummy was built by considering the most important export sector for each country among agricultural, manufacturing, and oil & other minerals; high poverty was found to be associated with specialization in agricultural exports, while lower poverty was significantly linked with export specialization in oil & other minerals and (to a less extent) linked with manufacturing exports, thus confirming recent results by UNCTAD (2002) that the structure of trade is an important factor in determining the effect of globalization on poverty.

Some estimation technique analysis was carried out in columns 2 to 4 of Table 1. In column 2 the Maximum Likelihood Estimator (MLE) was used instead of the GLS. Significant changes do not appear. When combining time-series and cross-sectional data, it seems reasonable to assume that the error terms are heteroskedastic in the cross-section observations and autoregressive in the time-series. Such a model is run in column 3 of Table 1 where the dependent variable is the 1 USD/PPP poverty line. Previous findings are validated in terms of sign and significance of the coefficients of TRADE and PUBLIC, while the coefficient of FDI tended to be positive and also significant. Mahler (2001) suggests that for small samples it is advisable to use a Huber/White "sandwich" robust estimator that clusters observations by country. The estimation produced with this procedure is reported in column 4 of Table 1: to our aim this estimator has some disadvantages because it mainly focuses on between-country variations and this might explain the insignificant coefficients of TRADE. The same results of this sensitivity analysis also happened when considering the 2 USD/PPP poverty line as dependent variable (results omitted for space reasons).

While in the basic specification of column 1 we inserted the most intuitive and frequently used variables, it is clear that to measure and to estimate the whole process of internal liberalization and privatization is a cumbersome task. However, a sensitivity analysis can help us to shed some light on the topics under consideration. Column 5 of Table 1 considers one possible combination of the alternative available series that can be used to measure globalization: export over GDP to capture trade openness, net inflows of FDI over GDP to catch financial openness and central government expenditure as an index of the role played by the public sector; in this as in other specifications the sign and the statistical significance of the coefficients remained the same: indeed the correlation between variables used to proxy the same concept was high[23] hence it could be expected that results did not differ too much.

However, some general considerations can be of concern: (i) when the variables used were measures of trade policy (as the value of export duties over total exports or total (import + export) taxes over international trade), the significance of TRADE diminished; therefore, it can be suggested that the effectiveness of trade openness, not policy measures aimed to increase openness, is the relevant factor affecting poverty; (ii) empirical results might be affected by the variation in the size and the composition of the sample due to the incompleteness and the different coverage of the measures we used.

Sala-i-Martin database computes poverty ratios at 1 and 2 USD/PPP international poverty line. Therefore in columns 6 and 7 of Table 1 we replicated the regressions run

in columns 1 and 5 by replacing the 2 USD/PPP poverty ratio as dependent variable. Results tended to confirm previous findings for TRADE, PUBLIC and FDI.

China and India are the two most populated countries in the world. Although in absolute terms their trends in poverty and globalization are more important, their weight in the sample is the same than any other country's; however, their inclusion or not in the study did not modify the results, as column 8 of Table 1 (run excluding China and India from the sample) confirms.

Column 9 corrected for endogeneity problems, by lagging all the independent variables of one period: it is interesting to note that PUBLIC became insignificant while also TRADE was now significant at the 10% level only.

As highlighted in the previous section, the specification of the model run was chosen on the basis of a comprehensive sensitivity analysis. Among other things, we augmented the model with indices of indebtedness, both public and external, and with a control for the size of the country. Excessive internal and external debt can constrain the degree of attainable globalization and reduce the gains or increase the costs associated with specific economic policies. Public debt was measured by debt over GDP ratio; External debt was computed by dividing external debt over GDP. Indeed, it is also important to control for country size both because small countries are inclined to be more open and because big countries generally have higher levels of inequality due to the existence of regional disparities, which are likely to be associated with higher poverty rates. Since no significant differences appeared in the analysis, results are omitted and the model specification chosen was therefore [1].

As described previously, poverty measures coming from different sources and survey methodologies have been collected. We used, in alternative to Sala-i-Martin data, World Bank's data on absolute poverty. Results are presented in column 10 to 12: in column 10, the dependent variable was 1 USD/PPP poverty ratio coming from World Bank, in column 11 the dependent variable was 2 USD/PPP coming from World Bank; in column 12 the dependent variable was 1 USD/PPP poverty gap. Due to the low number of observations per country (two for three quarters of the sample, one for the other) we used robust OLS estimators and clustered by country; therefore the results have to be interpreted with care, prevalently representing cross-country variation. While the sign and the significance of PUBLIC, regional belonging and export specialization were confirmed, TRADE (and FDI) were not significantly different from zero.

Relative Poverty

With respect to relative poverty, we made our own computations of headcount relative poverty ratios, using 40% and 50% of the mean income as poverty lines. We had 166 observations relative to 69 countries available for the econometric work. Within countries we had an average of 2.4 observations, spanning the period from 1970 to 1998 (in some cases 1999). Our dataset, however, was unbalanced and irregularly spaced.

The basic specification of model [1], in which the dependent variable is the percentage of the population with income below 50% of the mean income, is presented in

column 1 of Table 2. As in the previous section, we tested for the existence of country-specific effects by using the Breusch and Pagan multiplier test. For all the specifications run, the test returned a high value of x^2, which allowed us to reject the null hypothesis of no random effects; for column 1, the value of the statistics was 101.07. The Hausman test did return x^2 statistics of 1.54, which allows rejection of the null hypothesis of no correlation between the country specific effect and other independent variables.

Some important differences in the results appear with respect to absolute poverty: (i) trade did not enter significantly in the model; the sign of its coefficient, which was always insignificant, was not even consistent across specifications. Such result, compared to the impact of TRADE on absolute poverty, opens up important policy implications; (ii) financial openness appeared to be an important factor correlated with higher levels of relative poverty, although this result was not strong across all the specifications; (iii) with respect to public intervention in the economy, the tax ratio over the GDP was still significantly linked to poverty, although the relationship was certainly weaker than the link with absolute poverty. In column 2 of Table 2 we used a different estimator, the Maximum Likelihood estimator, in column 3 we corrected the model by assuming that disturbances were heteroscedastic in the cross-section observations and autocorrelated in the time series, while in column 4 we used OLS estimator clustering by country: FDI was not anymore significant in these two latter cases.

However, it is important to point out that, contrary to what happens for absolute poverty, the substitution of other proxies for PUBLIC into the model weakens the reliability of the picture that can be drawn. In column 5 of Table 2 an alternative specification is presented, in which export over GDP, net FDI inflows over GDP and public expenditure over GDP were used to measure TRADE, FDI and PUBLIC respectively. While the significance of the first two coefficients remained basically the same, PUBLIC did not enter significantly in the regression anymore: hence it can be argued that social spending seems to be particularly important for maintaining low levels of absolute poverty, while in a context of relative poverty a concept more linked to redistribution seems to be relevant.

Another interesting difference can be observed with regard to regional dummies: with respect to Latin America, signs of the dummies' coefficients were all negative and significant, and this was consistent with the perception that *a)* relative poverty is experienced by most countries in Latin America, and *b)* this remains persistent over time although absolute poverty levels are on average a less stringent problem. With respect to specialization dummies, there was no evidence of effects driven by structural differences in exports, this again is a difference with respect to absolute poverty.

All these findings highlight that the effect of globalization on relative poverty does not share the same features found with respect to absolute poverty. This is confirmed by several other symptoms: (i) when the dependent variable was the percentage of individuals below the 40% of the mean income poverty line (columns 6 and 7 of Table 2) only the measure of FDI remained significantly associated with poverty; (ii) the data might be affected by problems of endogeneity: in column 8 we lagged all the independent variables

of one period: while FDI was still significant, PUBLIC did not have any significant effect on relative poverty anymore; (iii) as in previous section, the exclusion of China and India from the sample (column 9 of Table 2) did not have any effect on the results of the econometric exercise.

Table 2. Panel regressions: Relative poverty

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TRADE		0.02 [1.04]	0.02 [1.10]	0.04 [0.31]	0.01 [0.31]	0.00 [0.07]	0.02 [1.96]	-0.00 [-0.24]	-0.01 [-0.26]	0.01 [0.77]	0.01 [0.52]
FDI		0.13* [1.73]	0.13* [1.79]	0.06 [0.73]	0.18 [1.35]	0.59* [1.89]	0.12* [1.77]	0.61** [2.09]	0.29** [1.99]	0.14* [1.87]	0.15** [1.96]
PUBLIC		-0.18* [-1.88]	-0.19** [-1.99]	-0.16*** [-2.70]	-0.18 [-1.54]	-0.06 [-0.83]	-0.10 [-1.10]	0.14 [0.99]	-0.01 [-0.05]	-0.20** [-2.05]	-0.20** [-2.09]
SIZE											-0.00** [-2.05]
Region dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Specialization dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	Within	0.05				0.04	0.05	0.05	0.04	0.05	0.04
	Between	0.69				0.68	0.67	0.63	0.63	0.71	0.72
	Overall	0.63			0.64	0.62	0.61	0.59	0.62	0.65	0.67
Wald χ^2		113	71 (LR)	565	16 (F)	104	100	107	87	115	126
No. observ.		134	134	122	134	133	134	166	98	128	134
No. groups		57	57	45	57	57	57	69	59	55	57

Notes: in square brackets the value of z statistics; *, **, *** mean that the coefficients are statistically significant at the 90%, 95%, 99% respectively. The following variables, described in the Appendix, were included in the regression: Column 1: hpi50 = f(tra_gdp, nfdi_i, tax_gdp, region, spec) Random effect GLS; column 2: hpi50 = f(tra_gdp, nfdi_i tax_gdp region, spec) MLE; Column 3: hpi50 = f(tra_gdp, nfdi_i, tax_gdp, region, spec) GLS with heteroscedastic panels and autocorrelated time-series; Column 4: hpi50 = f(tra_gdp, nfdi_i, tax_gdp, region, spec) robust OLS with cluster; Column 5: hpi50 = f(exp_gdp, nfdi_gdp, g_gdp, region, spec), RE GLS; Column 6: hpi40 = f(tra_gdp, nfdi_i, tax_gdp region, spec), RE GLS; Column 7: hpi40 = f(tra_gdp, nfdi_gdp, cge_gdp, I.region, I.spec) RE GLS; Column 8: hpi50 = f(tra_gdp, nfdi_i, cge_gdp, region, spec) with lags of one period; Column 9: hpi50 = f(tra_gdp, nfdi_i, tax_gdp, region, spec) RE GLS without China and India; Column 10: hpi50 = f(tra_gdp, nfdi_i, tax_gdp, region, spec, pop) RE GLS

In other trials we checked variables such as size, the effect of obtaining credit from IMF, external indebtedness, democracy, political freedom, public debt and religion. None of these variables seemed to be linked to relative poverty, except (as shown in column 10 of Table 2) country size, which were negatively linked to relative poverty.[24]

Finally, particularly in the case of relative poverty, our model mostly explained between panel poverty (as the values of R^2 reported in Table 2 confirm[25]) and it is less useful for the purposes of analyzing and understanding the dynamics of within-country poverty (on which see Santarelli and Figini, 2004).

CONCLUDING REMARKS

The analysis of the effects of globalization on poverty, inequality and social development represents now a hot debate in economic research, leading to a growing body of literature. It is commonly accepted, in such literature, that the most successful countries in raising living standards have been those more able to set in motion a dynamic relationship between growth, participation in global markets and policy. Our contribution to this debate focused on the following features: (i) we explicitly considered relative poverty together with absolute poverty in the econometric study; (ii) we extended the analysis to a multidimensional definition of globalization, including aspects of openness to trade, financial integration, and the role of the public sector in the economy; (iii) we carried out a throughout sensitivity analysis of model specification, data sources and variables used.

Although most of our results should be submitted to further analysis in order to improve the statistical robustness, a few concluding remarks can be drawn from the econometric study carried out in previous sections.

First, in spite of the many counter arguments that can be put forward, some indication arises that trade openness and the "size of the government" might be associated with lower absolute poverty levels. Conversely, financial openness (and still the size of the government) tends to be linked to more relative poverty. Of course, this interpretation is inferred from aggregate analysis of a huge number of countries. In this connection, it is very likely that case studies performed at the level of the individual countries would result in less straightforward results, with only a limited number of countries emerging as fully integrated into the world economic system and able to raise their living standards and reduce poverty.

Second, there is a substantial difference between the results we obtained from absolute and relative poverty analysis: this suggests, consistently with the previous literature, that relative and absolute poverty are two separate concepts, with different meanings, measurement procedures, and theoretical links with globalization. In this respect, the link between FDI and relative poverty can be supportive of Feenstra and Hanson's (1997) findings – according to which some aspects of globalization might be linked with more inequality - while the Heckscher and Ohlin idea that a rise in trade raises employment (and therefore the living standards) in developing countries could constitute the framework in which trade openness is found to benefit poverty. Clearly, the role of the government in

setting low levels of poverty has to be interpreted in terms of provision of the necessary goods to the poor as well as the achievement of redistribution goals.

In sum, the policy conclusions stemming from our econometric analysis are rather tenuous (in particular when using lagged variables as instruments) and no definitive interpretation can be inferred about the effects of globalization on poverty. Nevertheless, we believe that in terms of policy prescription this study suggests some useful general lines of conduct:

1. policy makers have to be aware that globalization is a controversial issue and should be handled with care: the specific economic and social characteristics of a country might be the key issue in determining its performance in the present globalization process. This implies that automatic implementation of standard procedures could be less effective in certain countries and more in others, depending upon their respective socio-economic features. In particular, rather than accept passively the liberalization process, developing countries should attempt to manage their integration into the global economy, by promoting the development of domestic capabilities.
2. integration in international trade should be taken as an opportunity for achieving important results in terms of economic growth and absolute poverty reduction. Nevertheless, this does not exclude the need for intervention in trade, capital and technology flows aimed at promoting competitiveness (Stiglitz, 1996).
3. a more proactive policy agenda should be set to manage, and possibly to limit, financial openness since it seems to hit relative poverty.
4. the key role that can be played by the State in the fight against poverty and in the achievement of development goals deserves to occupy a prominent position in the policy agenda.

Our findings raise a number of issues for future research. We have disentangled globalization by distinguishing between free trade of goods and financial openness and not attempted to test if openness is *per se* good for poverty. One might try to overcome this limitation, implicit in the analysis performed in the present paper, by building comprehensive indices of globalization. Nor have we investigated whether the globalization process has affected the dynamics of technological change and the early emergence of a knowledge-based entrepreneurial economy at the country level. One might try to extend this analysis by using patent counts and measuring the dynamics of entrepreneurship (in terms of the share of business owners in the labor force) *vis-á-vis* that of trade openness and FDI.

We regard such issues to be important areas for future research.

APPENDIX

Table A1. Definition and descriptive statistics of the variables used in the regression analysis (limitedly to the results presented in Tables 1 and 2).

Variable	Description	Mean	Std, Dev,	Min	Max
cge_gdp	General government final consumption expenditure as % of GDP (WDI)	14.42	6.34	1.25	46.30
exp_gdp	Export of goods and services as % of GDP (WDI)	30.74	23.47	2.05	199.84
g_gdp	Public expenditure, total a s % of GDP (WDI)	25.11	11.58	0	80.68
gdppc	GDP per capita, constant 1995 US$ (WDI)	2099.39	3191.10	96.61	25878.57
gpi1c	Gap Poverty Index, 1USD/PPP (World Bank)	8.68	10.45	0	39.50
hpi1b	Headcount poverty index, 1 USD/PPP (Sala 1-i-Martin)	17.90	19.44	0	73.20
hpi1c	Headcount poverty index, 1 USD/PPP (World Bank)	22.19	20.71	0	78.40
hpi2b	Headcount poverty index, 2 USD/PPP (Sala 1-i-Martin)	37.50	25.71	0.10	93
hpi2c	Headcount poverty index, 2 USD/PPP (World Bank)	44.43	27.79	0.30	96
hpi40	Headcount pov erty index, 40% of mean income (own computation)	16.84	11.67	0.11	45.99
hpi50	Headcount poverty index, 50% of mean income (own computation)	25.05	12.86	0.59	54.91
nfdi_gdp	Foreign direct investment, net inflows as % of GDP (WDI)	1.60	2.67	-5.18	24.43
nfdi_i	Foreign direct investment, net inflows as % of gross capital formation (WDI)	6.84	9.98	-29.00	71.85
region	Region code (1=Latin America and Caribbean; 2=North Africa and Middle East; 3=Sub Saharan Africa; 4=Eastern Europe and Central Asia; 5=South an d South-East Asia)	3.05	1.37	1	5
spec	Index of export specialization (1=Agricultural; 2=Manufacturing; 3=Oil and other minerals) (own computation)	1.80	0.73	1	3
tax_gdp	Tax revenue as % of GDP (WDI)	17.01	8.13	0	47.49
tra_gdp	Trade as % of GDP (WDI)	68.60	46.15	4.23	405.53

ENDNOTES

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1 For a summary, see Bigsten and Levin (2001). See also Kanbur and Squire (2000).

2 See for example Edwards (1992), Sachs and Warner (1995) and Harrison (1996).

3 It is however worth noting that, symmetrically, this process would lead to an increase in both inequality and poverty in developed countries.

4 The ambiguity in determining the final effect of openness on inequality and poverty is well debated in the recent literature and stems from the complexity of factors to take into account, among which the existence of "cones of diversification" (Davis, 1996), three levels of skill (high, medium and low) as in Wood (1994), the skill-biased nature of technological change (Berman *et al*., 1994), and the skill-enhancing trade hypothesis (Robbins 1996, Zhu and Trefler, 2001). For a survey of the literature, see Piva *et al*. (2003).

5 We refer to the huge body of literature on this topic for an extensive discussion on poverty definition, conceptualization and measurement. See for example Ravallion (1996) and Kanbur and Squire (2000) for a description of the methodological issues, and Ravallion (2001) for a detailed bibliography.

6 In fact, the adequate living standard may include both the consumption of purchased goods and the imputed value of household's own production, or it may refer to the minimal income necessary to undertake such consumption or to the physical availability of goods and services.

7 To compute these measures we ran "povcal", the routine created by Chen for the World Bank, on selected distribution data (mainly included in the UNU-WIDER database). Owing to the availability of grouped data only, we considered the mean income to be a more reliable indicator for building poverty lines than the median income.

[8] Relative poverty indices would not pass any of the tests of goodness that usually apply to inequality indices, including Lorenz consistency.

[9] For a survey of the main measures of happiness and well-being see Piergiovanni and Pisani (2003).

[10] On the other hand, setting the poverty line at 40% or 50% of the mean income is arbitrary and ignores that the perception of social exclusion may change over time (if changes in income distribution arise) and may differ across countries.

[11] Sala-i-Martin focused on a different and broader sample of countries with respect to previous studies.

[12] For updated figures, see http:\\www.worldbank.org\research\povmonitor.

[13] Although we are aware that this measure does not fully account for both levels of financial openness: capital account liberalization and national treatment of foreign banks and other operators entering local markets.

[14] For example, the studies collected by Cornia and Lipumba (1999) show that, in the case of Africa, liberalization of financial markets has attracted large inflows of short-term speculative capital which induced large swings in the nominal and real exchange rates. A major consequence of such speculative movements is a lack of adequate incentives to potential private investors in the tradable sector.

[15] It has to be added that short term portfolio flows are often seen as harmful in the literature on developing countries.

[16] For example, the period labeled as "1980" was composed of years 1978, 1979, 1980, 1981, 1982. "1998" was composed of 1997, 1998 and, when available, 1999. We used five-year averages to avoid lost of information due to possible missing values and to reduce the size of the measurement error.

[17] Given the level of income, countries with higher poverty rates show worse income distributions, although the relationship between poverty and inequality is not straightforward.

[18] Some results are reported in the paper. All descriptive figures on the absolute-relative poverty/openness relationship are however available upon request.

[19] Williamson (1990) summarizes the lowest common denominator of policy advice addressed by IMF and WB.

[20] The basis underlying this grouping procedure is the so-called "Weber link" (Weber, 1905; see. also Paldam, 2001), which identifies an indirect effect of the religion on economic development. According to this view, some religions - in particular certain strands of Protestantism - place moral value on attitudes (ranging from honesty to disapproval of idleness and consumption) that are good for investment and growth. In general, these attitudes have been shown to be widespread in all regions where the growth process has started and among the initial waves of entrepreneurs, irrespective of which religion is dominant in the region (see Lal,1998). However, Guiso, Sapienza and Zingales (2003) have recently found evidence that is consistent with the "Weber link".

[21] The set of poverty data derived from Sala-i-Martin represents a purely hypothetical approximation of the real poverty rates, as this author to a large extent "assumes" the distribution of income in the case of many countries for which he has no data. This database has been criticized, among others, by Milanovic (2002).

[22] Of course, this does not imply that low tax revenue is always and necessarily an indicator of the negative impact of globalization on poverty. In effect, a policy aimed at cutting taxes and government expenditures might target poverty-reducing expenditures properly and reduce non-poverty related expenditures.

[23] A correlation matrix for the variables used in this work is available from the authors upon request.

[24] When we replaced the regional dummies with religion dummies, none of the religion dummies were significant. This contrasts with the implications of the "Weber link", and does not suggest that any religion is associated with good economic attitudes conducive to economic growth or at least to less poverty.

[25] The *within* R^2 is always below 0.10, whereas the *between* R^2 is always above 0.60.

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